THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RAMESHWAR BHARGAVA and DENNIS GALLAGHER

Appeal No. 1997-4321
Application No. 08/050,693

ON BRIEF

Before KIMLIN, PAK and KRATZ, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 11-15 and 17. Claims 1-10 and 19-29 have been allowed by the examiner, whereas claims 16 and 18, the other claims remaining

in the present application, have been objected to by the examiner. Claim 11 is illustrative:

11. A doped particle of semiconductor material having a diameter of less than 100 D with a doping % of less than 1%.

The examiner relies upon the following reference as evidence of obviousness:

Ying Wang et al. (Wang), "Three-Dimensionally Confined Diluted Magnetic Semiconductor Clusters: $Zn_{1-x}Mn_xS$," 77 Solid State Communications no. 1, 33-38 (1991)

As recited in independent claim 11, appellants' claimed invention is directed to a particle of semiconductor material having a doping percent of less than 1%. An example of the doped semiconductor material encompassed by claim 11 is ZnS doped with Mn.

Appellants submit four separate groupings for the appealed claims at page 5 of the Brief. However, the ARGUMENT section of the Brief fails to present any argument that is reasonably specific to any particular claim on appeal. Accordingly, all the appealed claims stand or fall together with claim 11. In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987). See also 37 CFR § 1.192(c)(5) and (c)(6) (1994).

Appealed claims 11-15 and 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Wang.[1]

We have thoroughly reviewed each of appellants' arguments for patentability. However, we are in full agreement with the examiner that the subject matter defined by appealed claim 11, with which all the appealed claims stand or fall, would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the Wang disclosure. Accordingly, we will sustain the examiner's rejection for essentially those reasons expressed in the Answer, and we add the following primarily for emphasis.

Appellants do not dispute that Wang discloses a semiconductor material comprising ZnS and Mn, the composition exemplified in the present specification, having a diameter of less than 100 D. Appellants contend, however, that Wang discloses a semiconductor alloy and "never suggests ***doping*** rather than ***alloying*** a semiconductor material, and never

[1] The examiner misstates at page 3 of the Answer that claim 10 stands rejected under § 103. However, page 1 of the examiner's final rejection states that claim 10 is allowed and claims 11 to 15 and 17 are rejected.

suggests an impurity concentration of ***less than 1%***" (page 7 of Brief).

We are not persuaded by this argument because Wang expressly teaches that "the Mn doping level is controlled by varying this ratio of Zn/Mn nitrates in this original solution" (page 34, column 1, first full paragraph, emphasis added). Hence, we agree with the examiner that the distinction between ZnS doped or alloyed with Mn is a semantical one without significant difference. As for the claimed amount of dopant of less than 1%, Wang discloses that Mn is present in an amount of less than 0.1 (10%), which encompasses the claimed amount of less than 1% (see page 33, column 2, last paragraph). In addition, Wang evidences that it was known in the art to dope ZnSe with Mn with an amount in the range of greater than 0% and less than 0.55% (page 35, column 2). In addition, as pointed out by the examiner, Wang discloses that it was known to tune the band parameters and lattice constants of the semi-conductor by varying the composition and doping level of the Mn (see page 33, column 1, first paragraph, and page 34, column 1, lines 15-17). Accordingly, we agree with the examiner that it was known in

the art to vary the Mn doping concentration as a result-effective variable and, therefore, it would have been prima facie obvious for one of ordinary skill in the art to utilize a doping concentration of less than 1%. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Moreover, it is well settled that where patentability is predicated upon a change in a condition of a prior art composition, such as a change in concentration or the like, the burden is on the applicant to establish with objective evidence that the change is critical, i.e., it leads to a new, unexpected result. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990); In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). We have not overlooked appellants' contention that "the unexpectedly good results (282 nm photo luminescent emission) underscore the critical functional relationship between the dopant level (less than 1%) and the excitation frequency, a relationship not at all appreciated by Wang" (page 12 of Brief). However, appellants have not carried their burden on this record of establishing that the emission results disclosed in the present specification for the specific composition, ZnS doped with Mn,

would have been considered truly unexpected by one of ordinary skill in the art in light of the Wang disclosure. In re Merck & Co., 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986); In re Klosak, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972). Furthermore, the examiner has lodged the valid criticism that the specification results are hardly commensurate in scope with the degree of protection sought by appealed claim 11, which embraces any semiconductor material of the recited diameter having a dopant level of less than 1%. In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 778 (Fed. Cir. 1983); In re Clemens, 622 F.2d 1029, 1035, 206 USPQ 289, 296 (CCPA 1980).

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

EDWARD C. KIMLIN Administrative Patent Judge	)	
CHUNG K. PAK Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
PETER F. KRATZ Administrative Patent Judge	)	

ECK:clm

Corporate Patent Counsel
U.S. Philips Corp.
580 White Plains Road
Tarrytown, NY 10591